2.4.2 Vertical Confining Effect

M. Livneh, Ilan, and Livneh (c. 1993) studied the vertical confining effect of granular layers on silt and clay subgrades by coring 11 holes through the asphalt pavement and penetrating the DCP through the ABC and into the silt and clay subgrade soils. A test pit was then excavated at each of the 11 sites exposing the subgrade. The DCP was then penetrated into the silt and clay subgrade soil without the vertical confinement of the ABC layer. A linear regression, see Figure 2.4, showed that the DCP penetration rate (PR) of the silt and clay subgrade confined by the ABC was on the average 34% lower (stronger) than the PR value in the unconfined condition. Two of the sites involving a silt subgrade soil showed that the silt exhibited a larger change in the DCP readings.

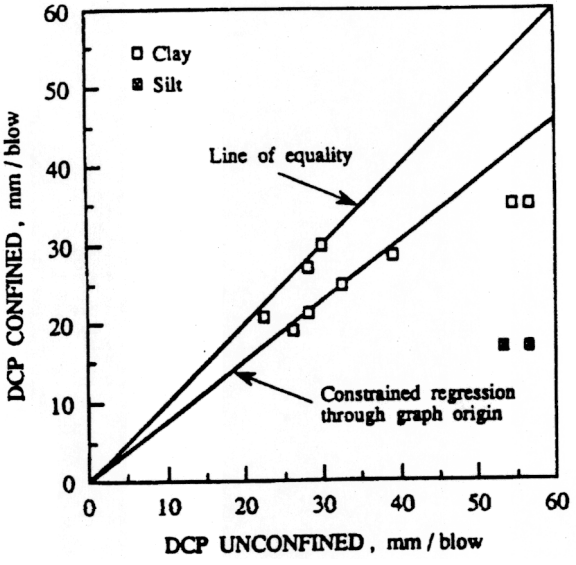

Figure 2.4 DCP Test Results for Subgrade Beneath Granular Structure (Livneh et al c.1993)

The vertical confining effect on clay subgrade was determined by penetrating the DCP from the surface to a depth of at least 500 mm at 27 locations, then excavating to a depth of 500 mm at each location and again penetrating the DCP into the exposed clay.